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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,027	01/09/2006	Jim Carothers	2380-560	4074

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EXAMINER	
FULLER, ROBERT EDWARD	
ART UNIT	**PAPER NUMBER**
3676	

MAIL DATE	DELIVERY MODE
01/14/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/564,027	CAROTHERS ET AL.	
	Examiner	Art Unit	
	ROBERT E. FULLER	3676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-14 and 16-42* is/are pending in the application.

4a) Of the above claim(s) *4,7-13,17,19-38 and 42* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5,14,16,18 and 39-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

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DETAILED ACTION

1. Applicant's submission, filed October 21, 2008, has been carefully considered. Examiner has withdrawn the objection to the claims set forth in the previous Office Action. With respect to the prior art, examiner has modified the rejections set forth in the previous Office Action in view of the amendments to the claims.

Claims 1, 3-14, 16-42 remain pending, and claims 4, 7-13, 17, 19-38, and 42 remain withdrawn.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 3, 5, 14, 16, 18, and 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson (US 4,507,019) in view of Rasmussen et al. (US 1,010,954).

With regard to claim 1, Thompson discloses a pipe-bursting apparatus for use with a drill string, the apparatus comprising: a frame (192) connectable with the drill string (188), wherein the frame comprises a housing segment having a first end and a second end; wherein the first end of the housing segment has a cross-sectional area less than a cross-sectional area of the second end and wherein the first end is disposed toward the drill string relative to the second end (see Figure 9); and at least one substantially spherical pipe-bursting member (218) supported by the frame and operable in response to movement of the drill string.

Thompson fails to disclose bursting members which are movable relative to the frame.

Rasmussen discloses a pipe-bursting apparatus using movable (rotatable) ball-bearings (19) as the bursting members.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Thompson to have included movable pipe-bursting members such as those shown by Rasmussen, since Rasmussen states that “friction between the casing and the swage is greatly reduced when the swage is forced into the casing, and the operation of forcing the swage into the casing is made simple and easy" as a result of providing movable pipe-bursting members (see lines 46-52 of Rasmussen). Furthermore, Thompson and Rasmussen discloses equivalent pipe-bursting members, and substituting one type of bursting member for another would have provided predictable results. Therefore, such substitution would have only required routine skill in the art.

With regard to claims 3 and 16, Thompson discloses a plurality of substantially spherical bursting members (see Figure 10).

With regard to claims 5 and 18, the bursting members of Thompson are radially disposed about the frame, and in a perpendicular plane to the longitudinal axis.

With regard to claim 14, Thompson discloses a horizontal directional drilling system comprising: a drive machine (184); a drill string (118), having a first end and a second end; wherein the first end of the drill string is operatively connected to the drive machine; a pipe-bursting apparatus operatively connected to the second end of the drill string, the apparatus comprising: a frame (192) operatively connected to the drill string wherein the frame comprises a housing segment having a first end and a second end; wherein the first end of the housing segment has a cross-sectional area less than a cross-sectional area of the second end and wherein the first end is disposed toward the drill string relative to the second end (see Figure 10); and at least one substantially spherical pipe-bursting member (218) supported by the frame and operable in response to movement of the drill string.

Thompson fails to disclose the bursting members being movable relative to the frame, but Rasmussen provides this teaching as discussed above with respect to claim 1.

With regard to claim 39, Thompson discloses a method for bursting pipe using a horizontal directional drilling system including a rotary drive machine (184), a drill string (118) having a first end and a second end, wherein the first end is operatively

connected to the rotary drive machine, a pipe-bursting apparatus operatively connected to the second end of the drill string, the pipe-bursting apparatus comprising a frame (192), the frame comprising a housing connected to the second end of the drill string, and a plurality of pipe-bursting member supported longitudinally along the frame, the method comprising: operating the spherical pipe-bursting member by moving the drill string and pipe-bursting member toward the rotary drive machine.

Thompson fails to disclose entirely spherical pipe-bursting members movable relative to the frame.

Rasmussen discloses a pipe-bursting apparatus using movable (rotatable) ball-bearings (19) as the bursting members.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Thompson to have included completely spherical, movable pipe-bursting members such as those shown by Rasmussen, since Rasmussen states that “friction between the casing and the swage is greatly reduced when the swage is forced into the casing, and the operation of forcing the swage into the casing is made simple and easy" as a result of providing spherical pipe-bursting members (see lines 46-52 of Rasmussen). Furthermore, Thompson and Rasmussen discloses equivalent pipe-bursting members, and substituting one type of bursting member for another would have provided predictable results. Therefore, such substitution would have only required routine skill in the art.

With regard to claims 40 and 41, Thompson discloses rotating and advancing the drill string.

Response to Arguments

4. Applicant's arguments filed October 21, 2008 have been fully considered but they are not persuasive. Applicant has argued that Thompson does not disclose substantially spherical bursting members, and that the combination of Thompson and Rasmussen is improper because Rasmussen is directed merely to expansion of pipes, rather than bursting of pipes.

Examiner respectfully traverses applicant's arguments. With respect to the first point, Thompson discloses *substantially* spherical bursting elements, since at least the part of the bursting member that is exposed is spherical. The part embedded in the frame is not spherical, but since this part of Thompson is never exposed, then Thompson discloses at least "substantially" spherical elements.

With respect to the second point, examiner disagrees that Rasmussen's rotatable expansion members teach away from pipe bursting. Though Rasmussen does state that the rotatable members reduce friction, it is not friction that causes the pipe to burst. The pipe is burst due to the stresses generated within the pipe as the swage is forced through it. These stresses are mainly a function of the *size* of the swage, not whether the swage generates enough friction or not. In other words, the bigger the swage, the more likely it is to generate enough stress to cause the pipe to fracture. The rotatable elements merely allow the swage to be forced through the pipe using less pulling force from uphole, since there is less friction resisting movement of the swage. Essentially,

"expanding" and "bursting" are not entirely different processes, as alleged by the applicant. Bursting is just a form of expanding in which the pipe is expanded beyond the fracture stress limit. Providing Thompson with rotatable bursting members would not prevent Thompson from bursting the pipe. Only reducing the size of Thompson's swage would make the pipe less likely to fracture. For additional evidence, examiner directs applicant's attention to Wentworth (US 6,568,488), which discloses a pipe bursting apparatus that contains bursting elements (24) which are movable relative to a frame. This shows that one of ordinary skill would *not* be inclined to believe that rotatable members are *only* to be used for pipe expansion, and not for pipe bursting.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT E. FULLER whose telephone number is (571)272-0419. The examiner can normally be reached on Monday thru Friday from 8:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer H. Gay can be reached on 571-272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shane Bomar/
Primary Examiner, Art Unit 3676

01/09/2009
REF